

# Journal Contents

VOLUME 47, 1968

	Page		Page
<b>January</b>		<b>PERA Quarterly Newsletter</b> ... ..	154
Survey ... .. facing	A4	<b>News from The Education and Membership</b>	
The Production Engineer and the Future. Speeches at the Annual Dinner ... ..	1	Department ... ..	156
<i>The 1967 E. W. Hancock Paper</i>		Institution Notes ... ..	157
"Is Industrial Democracy Compatible with Efficiency?" by John M. Boyd ... ..	7	Correspondence. Group Technology using the Opitz System ... ..	159
Report and Discussion ... ..	13	News of Members ... ..	162
New System for the Election of Council. The Single Transferable Vote ... ..	24	Hazleton Memorial Library — Additions ... ..	164
"Group Technology — Using the Opitz System" by E. A. Howarth, MSc, BSc(Tech), CEng, MIProdE, AMIMechE ... ..	25		
<i>Plastics and The Production Engineer Conference, 1967</i>		<b>April</b>	
"Machinery for the Production of Expanded Polystyrene Package Mouldings" by J. M. Kent, BSc(Hons) ... ..	36	Survey ... .. facing	A1
"A Machine Shop for Blind Operators" by G. W. Rea, CEng, MIProdE ... ..	43	<i>The James N. Kirby Paper 1967</i>	
PERA Quarterly Newsletter ... ..	49	"Production, Politics and Technical Progress — The Challenge of Change" by The Hon. Allen Fairhall, MP ... ..	165
Correspondence ... ..	50	Correspondence ... ..	173
News from The Education and Membership Department ... ..	53	<i>The 1967 Sir Alfred Herbert Paper</i>	
Institution Notes ... ..	54	"50 Years of Production Engineering" by Ir. Ernst Hijmans ... ..	174
News of Members ... ..	56	Report and Discussion ... ..	184
Hazleton Memorial Library — Additions ... ..	58	<i>Plastics and The Production Engineer Conference 1967</i>	
The Council of Engineering Institutions. Register of Chartered Engineers ... ..	59	"The Development and Application of the High-Speed Plastics Rotational Moulding Technique" by I. D. MacKnight-Thomson ... ..	190
		CEI News ... ..	199
<b>February</b>		Institution Notes ... ..	200
Survey ... .. facing	A4	Obituary — P. H. Steer ... ..	202
Fluidics in Industry ... ..	61	News of Members ... ..	203
<i>The 1967 George Bray Memorial Lecture</i>		Hazleton Memorial Library — Additions ... ..	207
"Fluidics in Production Engineering" by C. J. Charnley, BSc(Eng), CEng, MIProdE, MInstMC	63	Membership Elections and Transfers approved by the Council of the Institution, 18th January, 1968	209
Report and Discussion ... ..	83		
"Speedier Methods of Network Planning" by J. A. Larkin, MSc, CEng, AMIMechE, MIProdE ...	93	<b>May</b>	
Institution Notes ... ..	102	Survey ... .. facing	A4
Obituary. Major-General K. C. Appleyard, CBE, TD, DL, JP, CEng, MIMechE, MIProdE, AMIMinE, AIME ... ..	104	International Hovercraft Conference 1968. Opening Address by John Stonehouse, MP ... ..	211
News of Members ... ..	105	"Aluminium Cryogenic Vessel and Pipe Fabrication Shop" by J. Colvin, CEng, MIProdE, AMInstW ... ..	213
Membership Elections and Transfers approved by the Council of the Institution, 19th October, 1967	107	<i>Plastics and The Production Engineer Conference 1967</i>	
Hazleton Memorial Library — Additions ... ..	109	"Thermo-Forming Materials, Machines and Methods" by S. W. Fagence, MInstPkg ... ..	223
		"The Fabrication of Large Microwave Reflectors In Reinforced Plastics" by D. P. Ashford ... ..	236
<b>March</b>		PERA Quarterly Newsletter ... ..	249
Survey ... .. facing	A4	Institution Notes ... ..	251
"The Role and Status of The Production Engineer Today" by Ralph Gabriel, MA(Cantab), CEng, AMIMechE, FIProdE ... ..	111	News of Members ... ..	255
<i>The 1967 Viscount Nuffield Memorial Paper</i>		Hazleton Memorial Library — Additions ... ..	257
"North Sea Gas — Some Engineering Implications of Its Use" by D. E. Rooke, BSc(Eng), CEng, AMIMechE, MICHemE, MIGasE ... ..	113		
Report and Discussion ... ..	138	<b>June</b>	
"Non-Destructive Testing Standardisation in Great Britain" by C. C. Bates, CGIA, CEng, FIProdE; and C. Campkin, MIEE, MNDTS ... ..	143	Survey ... .. facing	A4
		International Machine Tool Exhibition 1968 ... ..	259
		<i>The Machine Tool Industry — The Manufacturer's Viewpoint</i>	
		"The Critical Years" by Ralph Gabriel, MA(Cantab), CEng, AMIMechE, FIProdE ... ..	261
<i>The Production Engineer - December 1968</i>			
			625

	Page		Page
<i>The Machine Tool Industry—The User's Viewpoint</i>		<b>September</b>	
"Machine Tools and Productivity" by G. A. J. Witton, CEng, FIProdE ...	270	Survey ...	... facing A4
<i>The Machine Tool Industry—A Survey of Present Trends</i>		"The Revolution in Communication" a foreword by A. J. Romiszowski (Guest Editor) ...	411
"Technological Trends" by V. L. Moffatt, CEng, MIProdE, and H. Moran, CEng, MIProdE ...	274	<i>Man-to-Man Communication</i>	
<i>The Machine Tool Industry—Ministry Activities</i>		"Improving Communication in Design and Production" by B. T. Turner, MSc(Eng), CEng, FIMechE, AMICE, AFRAeS, MBIM ...	415
"Machine Tool Development—Sponsored by The Ministry of Technology" by Cecil Timms, DEng, FIMechE, FIProdE ...	279	"Developments in Rapid Printing and Duplication" by J. A. Hargroves ...	426
"Computer Scheduling for Batch Production Machine Shops" by J. Loveridge, MSc, CEng, MIMechE, MIProdE, and J. H. F. Sawyer, BSc, DGS(Birm), CEng, MIEE, MIProdE ...	286	"Models and Their Use as a Means of Communication" by S. A. Glazebrook ...	429
"Production Engineering at The University of Strathclyde ...	298	<i>Man-Machine Communication</i>	
Institution Notes ...	299	"Computer-Aided Design: Theory and Scope" by J. C. Gray ...	435
Institution Conference Papers ...	301	"Design Automation" by H. G. Adshead ...	439
News of Members ...	303	"Information and The Control of Machine Tools" by H. Tipton, MSc, FInstP ...	443
Hazleton Memorial Library—Additions ...	305	"Future Trends in Numerical Control" by F. J. Robinson, BSc MPhil, and J. W. Miles ...	449
<b>July</b>		<i>Machine-Machine Communication</i>	
Survey ...	... facing A4	"Factory Communication System for Centralised Control" by D. H. Ralston, DCAe, CEng, FIProdE ...	453
"The Changing Role of the Engineer in Industry" by Sir Eric Mensforth, CBE ...	307	"Communication System Requirements for Process Management" by J. F. Roth, BSc(Eng), CEng, FIEE ...	461
"The Technology, Economy and Philosophy of Improving Productivity in the Manufacturing Industries" by Dr. D. F. Galloway, CBE ...	310	Metric Fine Series of Screw Threads ...	471
"Some Analytical Approaches to Assembly Line Problems" by Nick T. Thomopoulos, PhD, MA, BS ...	345	Correspondence ...	472
"Material Utilisation for Higher Productivity" by H. K. Ballal ...	352	Register of Chartered Engineers ...	473
Institution Notes ...	354	Institution Notes ...	475
CEI News ...	355	News of Members ...	477
News of Members ...	356	<b>October</b>	
Hazleton Memorial Library—Reviews and Additions	358	Survey ...	... facing A4
Membership Elections and Transfers approved by the Council of the Institution 30th April, 1968 ...	360	Founder Member of the Australian Council Elected Honorary Fellow—James M. Steer, CEng, FIProdE ...	479
<b>August</b>		Establishment of New South African Institute of Production Engineering ...	480
Survey ...	... facing A4	<i>International Hovercraft Conference</i>	
The Principal Officers 1968-1969 ...	363	"The Production of Air Cushion Vehicles" by E. F. Gilberthorpe, CEng, MIMechE, FIProdE, MBIM ...	481
<i>The 1968 Lord Sempill Paper</i>		"Hoverpallets for Material Handling" by A. J. I. Poynder, MC, MA(Cantab) ...	491
"The Future Development of Hovercraft" by R. Stanton-Jones, MA, DCAe, CEng, AFRAeS ...	365	"GERT Networks" by A. Alan B. Pritsker, PhD ...	499
"The Technology, Economy and Philosophy of Improving Productivity in the Manufacturing Industries" by Dr. D. F. Galloway, CBE. Report and Discussion ...	384	"Training Mechanical and Production Engineers to Use Plastics" by D. W. Hayter and H. I. F. Peel MSc(Tech), CEng, MIEE ...	507
"New Department of Automation Engineering at The City University ...	392	Correspondence ...	508
"Going Metric—A Record of Progress in Metrication" by Dr. W. S. Hollis, PhD BSc, CEng, FIProdE, and J. H. Winskill, CEng, FIProdE, AMIWM ...	393	Institution Notes ...	509
Correspondence ...	400	CEI News ...	510
News from The Education and Membership Department ...	401	News of Members ...	511
Institution Notes ...	404	Hazleton Memorial Library—Reviews and Additions	513
News of Members ...	407	Production Engineering Abstracts ...	514
Hazleton Memorial Library—Reviews and Additions	409	Membership Elections and Transfers approved by the Council of the Institution 25th July, 1968 ...	520
		<b>November</b>	
		Survey ...	... facing A4
		Second Discussion on Automated Assembling ...	523
		"Machine Shop Production Optimisation—A Target For Research" by E. H. Frost-Smith, BA, PhD, MIEE, and H. R. Marten, MA, MIMechE ...	525

	<i>Page</i>
Metrication Matters ... ..	540
"The Reduction of Chatter and Vibration in Metal Cutting Machine Tools" by P. S. Howes, MSc, DIC, CEng, MIMechE, MIProdE ... ..	541
<i>Plastics and The Production Engineer Conference 1967</i>	
"Fabrication of Large Plastics Structures" by P. W. McNally ... ..	552
Institution Notes ... ..	560
News from The Education and Membership Department ... ..	561
News of Members ... ..	562
Hazleton Memorial Library—Reviews and Additions	565
Production Engineering Abstracts ... ..	568
 <b>December</b>	
Survey ... .. facing	A4
The Institution in Canada—Establishment of Canadian Council, by W. S. S. Woodford, OBE	573

	<i>Page</i>
<i>The 1968 E. W. Hancock Paper</i>	
"Leadership in Management—The Elusive Element" by Brian P. Smith, BSc(MechEng), CEng, MIMechE, FIProdE, MBIM ... ..	579
"Surface Roughness on Turned Steel Components and the Relevant Mathematical Analysis" by K. V. Olsen ... ..	593
PERA Quarterly Newsletter ... ..	607
Correspondence ... ..	608
News from The Education and Membership Department ... ..	609
Institution Notes ... ..	611
CEI News ... ..	612
News of Members ... ..	613
Membership Elections and Transfers approved by the Council of the Institution, 24th October, 1968	616
Production Engineering Abstracts ... ..	619
Journal Contents—Volume 47, 1968 ... ..	625
Subject Index to Material Published—1968 ... ..	627
Author/Title Index to Material Published—1968	629

## Subject index to material published - 1968

*References are to page numbers; those printed in italics indicate the main subjects of a Paper*

- Aluminium: Fabrication, 213.
- Assembly Line Balancing, 345.
- Automation: Design, 439.
- Automation: Engineering: University Department, 392.
- Blind Operators: Machine Shop, 43.
- Canada: Institution in, 573.
- City University: New Automation Engineering Department, 392.
- Communication: Models, 492.
- Communication: Revolution in, 411.
- Communication: Design, 415.
- Communication: Production, 415.
- Communication System: Factory, 453.
- Communication System: Process Management, 461.
- Components: Group Technology: Opitz System, 25.
- Computer: Design Automation, 439, 435.
- Computer Aided Design, 435, 439.
- Co-operatives: Industrial Democracy, 7.
- Cryogenic Pipes: Aluminium, 213.
- Cryogenic Vessels: Aluminium, 213.
- Design Automation: Computer, 439, 435.
- Design: Computer Aided, 435, 439.
- Duplication: Developments, 426.
- Efficiency: Industrial Democracy, 7.
- Employees: Handicapped: Machine Shop, 43.
- Engineer in Industry, 307.
- Engineer: Role, 307.
- Fabrication: Reinforced Plastics Microwave Reflectors, 326.
- Factory: Communication System, 453.
- Fluidics, 63.
- Gas: North Sea, 113.
- George Bray Memorial Lecture 1967, 63.
- G.E.R.T.: Networks, 499.
- Graphical Evaluation Review Techniques, 499.
- Group Technology: Opitz Code, 25.
- E. W. Hancock Paper 1967, 7.
- E. W. Hancock Paper 1968, 579.
- Hovercraft: Future Development, 365.
- Hovercraft: International Conference 1968 Opening Address, 211.

- Hovercraft: Production, 481.
- Hoverpallets: Materials Handling, 491.
- Industrial Democracy, 7.
- Industry: Manufacturing: Productivity, 310.
- Information: Machine Tool Control, 443.
- International Hovercraft Conference 1968: Opening Address, 211.
- Institution in Canada, 573.
- James N. Kirby Paper 1967, 165.
- Leadership in Management, 579.
- Line Balancing: Assembly, 345.
- Lord Sempill Paper 1968, 365.
- Machine Shop: Blind Operators, 43.
- Machine Tools: Control, 449, 443.
- Man: Machine: Communications, 411.
- Material: Utilisations, 352.
- Materials Handling: Hoverpallets, 491.
- Mechanical Engineers: Plastics, 507.
- Metriation: Progress, 393.
- Metriation: Screw Threads, 471.
- Microwave Reflectors: Fabrication: Reinforced Plastics, 236.
- Models: Communication, 429.
- Moulding: Rotational: Plastics, 190.
- Networks: G.E.R.T., 499.
- Networks: Planning, 93.
- Non-Destructive Testing: Standardisation, 143.
- North Sea Gas, 113.
- Numerical Control: Future Trends, 449.
- Operators: Blind: Machine Shop, 43.
- Opitz System: Group Technology, 25.
- Package Mouldings: Expanded Polystyrene, 36.
- Plastics: Expanded Polystyrene: Packages, 36.
- Plastics: Mechanical Engineers: Production Engineers: Training, 507.
- Politics: Technical Progress: Production, 165.
- Polystyrene: Expanded: Package Mouldings, 36.
- Printing: Developments, 426.
- Process Managements: Communication System, 461.
- Production: Politics: Technical Progress, 165.
- Production Advisory Service: P.E.R.A., 339.
- Production Control: Communication System, 453.
- Production Engineers: Future (*see also* Engineer), 1.
- Production Engineer: Role: Status, 111.
- Production Engineer: Training: Plastics, 507.
- Production Engineering: Historical Survey, 174.
- P.E.R.A.: Work, 310.
- P.E.R.A.: Production Advisory Service, 339.
- Productivity: Improvement, 384.
- Productivity: Material Utilisation, 352.
- Progress: Technical, 165.
- Reinforced Plastics: Fabrication, 236.
- Roughness on Turned Steel Components: Surface, 593.
- Screw Threads: Metric, 471.
- Sir Alfred Herbert Paper 1967, 174.
- Surface Roughness on Turned Steel Components, 593.
- Testing: Non-Destructive: Standardisation, 143.
- Thermo-Forming Machines, 223.
- Thermo-Forming Materials, 223.
- Thermo-Forming Methods, 223.
- Training: Mechanical Engineers: Production Engineers, 507.
- Viscount Nuffield Memorial Paper 1967, 113.
- World Federation of Engineering Organisations: Creation, 199.
- Xerography, 426.

# Author/title index to material published - 1968

- ADSHEAD, H. G. Design automation. September, 439.
- Aluminium cryogenic vessel and pipe fabrication shop (Colvin). May, 213.
- ASHFORD, D. P. The fabrication of large microwave reflectors in reinforced plastics. May, 236.
- BALLAL, H. K. Material utilisation for higher productivity. July, 352.
- BATES, C. C. and Campkin, C. Non-destructive testing standardisation in Great Britain. March, 143.
- BOYD, J. M. Is industrial democracy compatible with efficiency? (E. W. Hancock Paper 1967). January, 7.
- CAMPKIN, C. and Bates, C. C. Non-destructive testing standardisation in Great Britain. March, 143.
- Changing role of the engineer in industry (Mensforth). July, 307.
- CHARNLEY, C. J. Fluidics in production engineering (George Bray Memorial Lecture 1967). February, 63.
- COLVIN, J. Aluminium cryogenic vessel and pipe fabrication shop. May, 213.
- Communications system requirements for process management (Roth). September, 461.
- Computer-aided design: theory and scope (Gray). September, 435.
- Design automation (Adshead). September, 439.
- Development and application of the high speed plastics rotational moulding technique (Macknight-Thompson). April, 190.
- Developments in rapid printing and duplication (Hargroves). September, 426.
- Fabrication of larger microwave reflectors in reinforced plastics (Ashford). May, 236.
- Factory communication system for centralised control (Ralston). September, 453.
- FAGENCE, S. W. Thermoforming-materials, machines and methods. May, 223.
- FAIRHALL, A. Production, politics and technical progress — the challenge of change (James N. Kirby Paper 1967). April, 165.
- 50 years of production engineering (Hijmans). April, 174.
- Fluidics in production engineering (Charnley). February, 63.
- Future development of hovercraft (Stanton-Jones). August, 365.
- Future trends in numerical control (Robinson and Miles). September, 449.
- GABRIEL, R. The role and status of the production engineer today. March, 111.
- GALLOWAY, D. F. The technology, economy and philosophy of improving productivity in the manufacturing industries. July, 310. (discussion) August, 384.
- GERT networks (Pritsker). October, 499.
- GILBERTHORPE, E. F. The production of air-cushion vehicles (International Hovercraft Conference). October, 481.
- GLAZEBROOK, S. A. Models and their use as a means of communication. September, 429.
- Going metric: a record of progress in metrication (Hollis and Winskill). August, 393.
- GRAY, J. C. Computer-aided design: theory and scope. September, 435.
- Group technology — using the Opitz system (Howarth). January, 25.
- HARGROVES, J. A. Developments in rapid printing and duplication. September, 426.
- HAYTER, D. W. and PEEL, H. I. F. Training mechanical and production engineers to use plastics. October, 507.
- HIJMANS, E. 50 years of production engineering (Sir Alfred Herbert Paper 1967). April, 174.
- HOLLIS, W. S. and WINSKILL, J. H. Going metric: a record of progress in metrication. August, 393.
- Hoverpallets for material handling (Poynder). October, 491.
- HOWARTH, E. A. Group technology — using the Opitz system. January, 25.
- Improving communication in design and production (Turner). September, 415.
- Information and the control of machine tools (Tipton). September, 443.
- Institution in Canada (Woodford). December, 573.
- International Hovercraft Conference 1968 (Stonehouse). May, 211.
- Is industrial democracy compatible with efficiency? (Boyd). January, 7.
- KENT, J. M. Machinery for the production of expanded polystyrene package mouldings (Plastics and Production Engineer Conference). January, 36.
- LARKIN, J. A. Speedier methods of network planning. February, 93.
- Leadership in Management — the elusive element (Smith). December, 579.
- Machine shop for blind operators (Rea). January, 43.
- Machinery for the production of expanded polystyrene package mouldings (Kent). January, 36.
- MACKNIGHT-THOMPSON, I. D. The development and application of the high speed plastics rotational moulding technique (Plastics and Production on Engineer Conference). April, 190.



- Material utilisation for higher productivity (Ballal). July, 352.
- MENSFORTH, E. The changing role of the engineer in industry. July, 307.
- Metric fine series screw threads. September, 471.
- MILES, J. and ROBINSON, F. Future trends in numerical control. September, 449.
- Models and their use as a means of communication (Glazebrook). September, 429.
- New department of automation at the city university. August, 392.
- Non-destructive testing standardisation in Great Britain (Fifth International Conference on Non-Destructive Testing (Bates and Campkin). March, 143.
- North-sea gas: some engineering implications of its use (Rooke). March, 113.
- OLSEN, K. V. Surface roughness on turned steel components and the relevant mathematical analysis. December, 593.
- PEEL, H. I. F. and HAYTER, D. W. Training mechanical and production engineers to use plastics. October, 507.
- POYNDER, A. J. I. Hoverpallets for material handling (International Hovercraft Conference). October, 491.
- PRITSKER A. A. B. GERT networks. October, 499.
- Production, politics and technical progress—the challenge of change (Fairhall). April, 165.
- Production engineer and the future (Annual Dinner). January, 1.
- PERA plan for improving productivity in the manufacturing industries. July, 339.
- Production of air-cushion vehicles (Gilberthorpe). October, 481.
- RALSTON, D. H. A factory communication system for centralised control. September, 453.
- REA, G. W. A machine shop for blind operators. January, 43.
- Revolution in communication (Romiszowski). September, 411.
- ROBINSON, P. and MILES, J. Future trends in numerical control. September, 449.
- Role and status of the production engineer (Gabriel). March, 111.
- ROMISZOWSKI, A. J. The revolution in communication. September, 411.
- ROOKE, D. E. North-sea gas: some engineering implications of its use (Viscount Nuffield Memorial Paper 1967). March, 113.
- ROTH, J. F. Communication system requirements for process management. September, 461.
- SMITH, B. P. Leadership in management—the elusive element (E. W. Hancock Paper 1968). December, 579.
- Some analytical approaches to assembly line problems (Thomopoulos). July, 345.
- Speedier methods of network planning (Larkin). February, 93.
- STANTON JONES, R. Future development of hovercraft (Lord Semphill Paper 1968). August, 365.
- STONEHOUSE, J. International Hovercraft Conference 1968. May, 211.
- Surface roughness on turned steel components and the relevant mathematical analysis (Olsen). December, 593.
- Technology economy and philosophy of improving productivity in the manufacturing industries (Galloway). July, 310. (discussion). August, 384.
- Thermo-forming materials, machines and methods. (Fagence). May, 223.
- THOMOPOULOS, N. T. Some analytical approaches to assembly line problems. July, 345.
- TIPTON, H. Information and the control of machine tools. September, 443.
- Training mechanical and production engineers to use plastics (Hayter and Peel) October, 507.
- TURNER, B. T. Improving communication in design and production. September, 415.
- WINSKILL J. H. and HOLLIS, W. S. Going metric: a record of progress in metrication. August, 393.
- WOODFORD, W. F. S. The Institution in Canada—Establishment of Canadian Council, December, 573.

